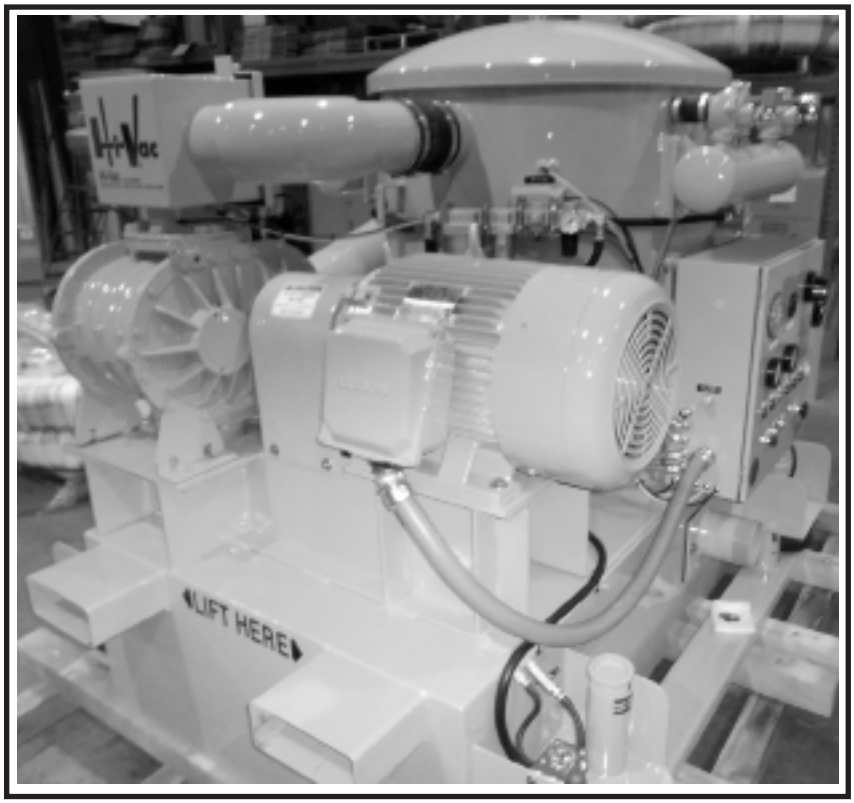
HV-XXX 850 SERIES



OPERATION
PARTS
& SERVICE

MANUAL

Hi-Vac Corporation
117 Industry Road
Marietta, Ohio 45750
Corporate: Tel: 740.374.2306 - Toll Free: 800.752.2400 - Fax: 740.374.5447
Web: www.hi-vac.com - E-mail: sales@hi-vac.com

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SURE FLEX COUPLINGS
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INSPECTION PROCEDURES

All pieces received should be inspected for damage immediately upon receipt.

1. Damage can be most easily detected by looking for scrapes on the paint.
2. Inspect all sheet metal and structural steel for damage such as bends, kinks or breaks.
3. Check all wiring for abrasions, cuts, cracks, etc. If any are found, repair or replace before connecting to power source.
4. Check all conduit runs and fittings for defects.
5. Check motor and vacuum pump for free rotation before starting under power for the first time after installation.
6. Compare the packing list attached to each piece of each shipment.
7. Verify the number of pieces and description of each piece shown on the packing slip.

REPORT ANY DAMAGE, NO MATTER HOW SLIGHT, IMMEDIATELY TO:

Hi-Vac® Corporation
117 Industry Road
Marietta, OH 45750
Attention: Service Department
Phone: 740.374.2306
Toll Free: 800.752.2400
Fax: 740.374.5447

Storage of your Hi-Vac® unit

Allow machine to be crated if at all possible while storing for short or long term durations.

1. For short-term storage. (30 days or less)
   - A. Rotate shafts every two to three weeks to avoid flat spotting of the ball bearings.
2. For storage over 30 days
   - A. To prevent damage due to corrosion, oxidation, etc., Refer to the maintenance manuals for each component.
   - B. Make sure that the inlets to the piping manifold system are covered with the dust plugs to prevent foreign objects from entering the system.
   - C. Add packages of desiccant to all electrical enclosures on sides of Hi-Vac®.
   - D. Turn off the compressed air supply to the Hi-Vac® and relieve any pressure in the compressed air lines on the unit.

WARRANTY

Hi-Vac® CORPORATION WARRANTS TO THE ORIGINAL PURCHASER OF THE **Hi-Vac®** UNIT QUOTED HEREIN THAT THE **Hi-Vac®** UNIT SHALL BE FREE FROM DEFECTS IN MATERIAL AND WORKMANSHIP UNDER NORMAL USE AND SERVICE. **Hi-Vac®** CORPORATION DOES NOT WARRANT COMMERCIAL ITEMS MANUFACTURED BY OTHERS SUCH AS DIESEL ENGINES, TRUCK CHASSIS, TIRES OR MOTORS. IN ADDITION, **Hi-Vac®** CORPORATION DOES NOT WARRANT THE REPLACEMENT OF ANY OF ITS PRODUCTS OR COMPONENTS AS A RESULT OF FAILURE DUE TO CORROSION. **Hi-Vac®** CORPORATION'S OBLIGATION UNDER THIS WARRANTY SHALL BE LIMITED TO THE REPAIR OR EXCHANGE OF ANY PART OR PARTS WHICH MAY PROVE DEFECTIVE UNDER NORMAL USE AND SERVICE WITHIN THE SHORTER PERIOD OF **TWO (2) YEARS OR FOUR THOUSAND (4,000) WORK HOURS** FROM THE DATE OF DELIVERY TO THE ORIGINAL PURCHASER AND WHICH **Hi-Vac®** CORPORATION'S EXAMINATION SHALL DISCLOSE TO ITS SATISFACTION TO BE DEFECTIVE. THIS WARRANTY REQUIRES PURCHASER TO OPERATE THE **Hi-Vac®** UNIT IN STRICT COMPLIANCE WITH THE PRINTED INSTRUCTIONS AND TO SERVICE THE **Hi-Vac®** UNIT ACCORDING TO THE METHODS AND SCHEDULES CONTAINED IN THE **Hi-Vac®** UNIT'S MANUAL. EVIDENCE OF PURCHASER'S SCHEDULED MAINTENANCE MUST BE REPORTED IN WRITING TO **Hi-Vac®** CORPORATION ON THE FORMS SUPPLIED TO PURCHASER IN THE **Hi-Vac®** MAINTENANCE MANUAL. SHOULD PURCHASER BELIEVE A DEFECT HAS BEEN DISCOVERED, THE PURCHASER SHALL RETURN THE ALLEGED DEFECTIVE PART TO **Hi-Vac®** CORPORATION FOR EXAMINATION, F.O.B THE **Hi-Vac®** PLANT, **MARIETTA, OHIO**. IN THE EVENT PURCHASER DOES NOT SERVICE AND MAINTAIN THE **Hi-Vac®** UNIT ACCORDING TO THE **Hi-Vac®** MAINTENANCE MANUAL, THE WARRANTY IS TO BE CONSIDERED NULL AND VOID AND **Hi-Vac®** CORPORATION'S OBLIGATION HEREUNDER SHALL BE DEEMED FULFILLED.

THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR USE AND OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF Hi-Vac® CORPORATION.

LIMITS OF LIABILITY

Hi-Vac® CORPORATION SHALL NOT BE LIABLE FOR AND PURCHASER ASSUMES RESPONSIBILITY FOR ALL PERSONAL INJURY AND PROPERTY DAMAGE RESULTING FROM THE HANDLING, POSSESSION OR USE OF YOUR **Hi-Vac®** INDUSTRIAL VACUUM CLEANER BY THE PURCHASER. THE LIABILITY OF **Hi-Vac®** CORPORATION ARISING OUT OF THE SUPPLYING OF YOUR **Hi-Vac® INDUSTRIAL VACUUM CLEANER**, OR ITS USE WHETHER ON WARRANTIES OR CLAIM OF NEGLIGENCE OR OTHERWISE, SHALL NOT IN ANY CASE EXCEED THE COST OF CORRECTING DEFECTS IN YOUR **Hi-Vac® INDUSTRIAL VACUUM CLEANER** AS HEREIN PROVIDED. **Hi-Vac®** CORPORATION SHALL NOT IN ANY EVENT BE LIABLE FOR ANY LABOR EXPENDED BY THE PURCHASER ON ANY PART OR PARTS OR FOR ANY SPECIAL DIRECT OR INDIRECT OR CONSEQUENTIAL DAMAGES. NO MATERIAL MAY BE RETURNED WITHOUT FIRST GETTING APPROVAL FROM **Hi-Vac®** CORPORATION. ANY GOODS RETURNED WITH SUCH APPROVAL MUST BE SENT BACK WITH ALL TRANSPORTATION CHARGES PREPAID WITHIN 30 DAYS AFTER ISSUANCE OF APPROVAL. GOODS RETURNED AND ACCEPTED IN ACCORDANCE WITH THE ABOVE CONDITIONS WILL BE CREDITED ON THE BASIS OF THE PRICES PAID AT TIME OF SHIPMENT.

MESSAGE TO NEW OWNER

Congratulations on your purchase of a new **Hi-Vac® INDUSTRIAL VACUUM SYSTEM. Hi-Vac® Corporation** is a leader in conveying and material pickup. The use of a **Hi-Vac®** system will not only save you money in the short term, it will also put you on the cutting edge of todays technology in vacuum systems. With **HiVAC's** vast array of configurations, it is possible to meet every consumers needs in material pickup for both wet and dry applications.

To get the most out of your new **Hi-Vac® INDUSTRIAL VACUUM SYSTEM,** please read and review the contents of this manual and become familiar with the procedures within.

Thank you for your purchase and we look forward to serving you again in the future.

SAFETY PRECAUTIONS

Hi-Vac®

SAFETY PRECAUTIONS

CAUTION

SOME DO'S AND DON'TS BEFORE GETTING STARTED WITH YOUR
NEW **Hi-Vac® SYSTEM.**

The safety of the operator is of great importance to us at **Hi-Vac®** Corporation. The decals, shields, guards and other protective features that are designed into the machine are there for your protection. A high percentage of the accidents that occur are due to careless behavior or misuse of machinery. We ask you to be a careful operator and to properly service your machine.

AIRLIFT SAFETY NOTE: Airlifts are standard on all units with an end dump hopper.

Before startup, remove the three (3) powerhead shipping spacers and discard. This is done by unscrewing the pipe caps, slipping off the spacers, and reinstalling the three (3) caps on the pipe.

BE SURE TO REINSTALL THE CAPS BACK ONTO THE PIPE. FAILURE TO DO SO MAY CAUSE SERIOUS INJURY TO PERSONNEL AND/OR DAMAGE TO MACHINE.

PROCEED WITH CAUTION

Before attempting to operate the machine, read carefully and understand all instructions contained in the manual.

* **Do not** put your hand in front of the intake nozzle while in operation.
* **Do not** put your face or any portion of head in front of the nozzle.
* **Do not** open control panel or remove any junction box cover while main power supply is live.
* **Do not** vacuum any flammable liquid.
* For mobile configurations, check that unit is properly stopped so unit will not tip or roll.
* **Do not** lubricate, adjust or repair the **Hi-Vac®** unit unless power source to the electric motor has been disengaged, and locked out.
* Keep all safety devices in place, while operating your **Hi-Vac®** unit.
* Read all warning and instruction decals placed on the machine and its associated equipment.
* Allow only responsible, properly instructed individuals to operate the machine.
* Always keep the **Hi-Vac®** unit in good operating condition.

* Clear the work area of objects that might interfere with proper operation of the **Hi-Vac®** unit.

* Be careful to avoid overhead electrical installations. Extreme caution should be exercised whenever working near or around electrical installations.

* **Do not** operate the **Hi-Vac®** unit while wearing loose clothing, watches or rings.

* Periodically check for any loose bolts or set screws.

NOTE:

AS WITH ANY TYPE OF HEAVY DUTY EQUIPMENT, CAUTION MUST BE EXERCISED IN ITS PROPER USE.

CAUTION:

KEEP HANDS CLEAR AND AWAY FROM BETWEEN POWERHEAD AND HOPPER WHEN POWERHEAD IS RAISED AND WHEN LOWERING POWERHEAD

WARNING:

FAILURE TO COMPLY WITH ANY OF THE ABOVE SAFETY INSTRUCTIONS OR THOSE THAT FOLLOW WITHIN THIS MANUAL MAY RESULT IN SEVERE INJURY OR DEATH!

PLEASE REMEMBER:

Safe operation begins with a safe operator. We ask you to be that type of operator.

Hi-Vac®

MACHINE SPECIFICATIONS

BASIC DESCRIPTION OF A 800 SERIES Hi-Vac® UNIT

The **MODEL NUMBER** is broken down into two descriptive parts.

1. The first part is the **SHELL SERIES**. This describes the series of the **Hi-Vac®** unit.

2. The second part is the HORSEPOWER given to the POWERHEAD. There are six different ranges of motors on an 800 SERIES **Hi-Vac®**. **20HP, 25HP, 30HP, 40HP, 50HP, and 75HP.**

THEORY OF OPERATIONS
A SIMPLE NARRATIVE OF HOW A Hi-Vac® WORKS

The following pages will describe, in as much detail as practical, the **Hi-Vac®** vacuum system. The system consists of four major components. The **Hi-Vac®** Powerhead, which is the actual vacuum producing part of the system, is mounted on a hopper. The Powerhead and hopper are mounted in a support stand. Connected to the Powerhead/hopper/support stand assembly is a pipe (hose), used to direct vacuum (air flow to material to be conveyed).

The intent of the system is to pick up spills and dust accumulations through various parts of the **Hi-Vac®** and return the materials to the to the plant. By carefully reading and following the instructions contained herein, the equipment will operate reliably and the plant environment will be improved, thereby making it a safer and cleaner place to work.

The **Hi-Vac®**, in it's simplest form, is a large vacuum cleaner. A positive displacement pump is used to evacuate the air from the storage bin below the **Hi-Vac®** Powerhead. Because there is a vacuum in the hopper, air enters it through the pick-up hose and piping connected to the unit. It is this air movement that conveys the material from the pick-up point to the **Hi-Vac®**.

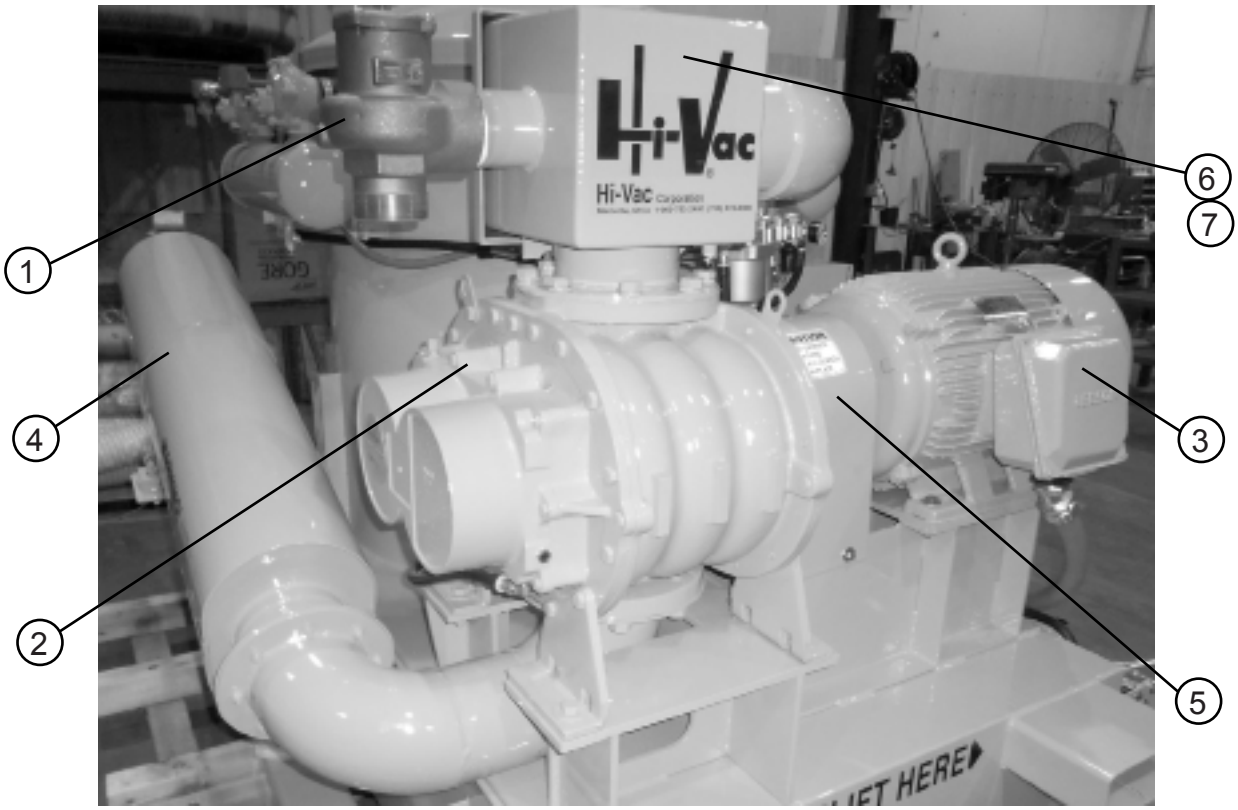
The heart of the system is a positive displacement lobe vacuum pump (blower). It is driven by a coupler or a set of v-belts and sheaves connected to a drive element, which could be an electric motor or a fuel fed engine. The blower contains impeller lobes spinning in opposite directions and always in contact of each other and the blower housing. While spinning, the lobes are capturing small volumes of air and pushing them out of the blower discharge and through an exhaust silencer back into the atmosphere.

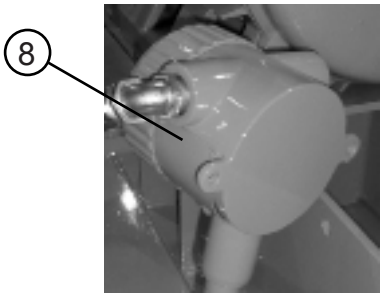
In order to prevent the material (and the dust generated by this conveying procedure) from being discharged into the atmosphere as well, a set of filter cartridges are installed. Before the air and material go into the blower they must first pass through these cartridges which remove nearly 100% of the dust from the air. As well as protecting the atmosphere from dust, this also stops any dust from entering the blower and causing serious damage.

There is one stage of separation of the material and dust from the air before they get to the filter cartridges. As the material enters the **Hi-Vac®** from the pickup hose and piping system it goes through a centrifugal separator which spins the material out of the air stream and into the collection bin below the Powerhead. Any material left in the air is then carried to the filter cartridges.

As the air passes through the filter cartridges, the dust is trapped on the outside of the cartridges. Every 10 to 15 seconds, compressed air is blasted into the inside of the cartridges. This pulse of air keeps the outside of the cartridges clean.

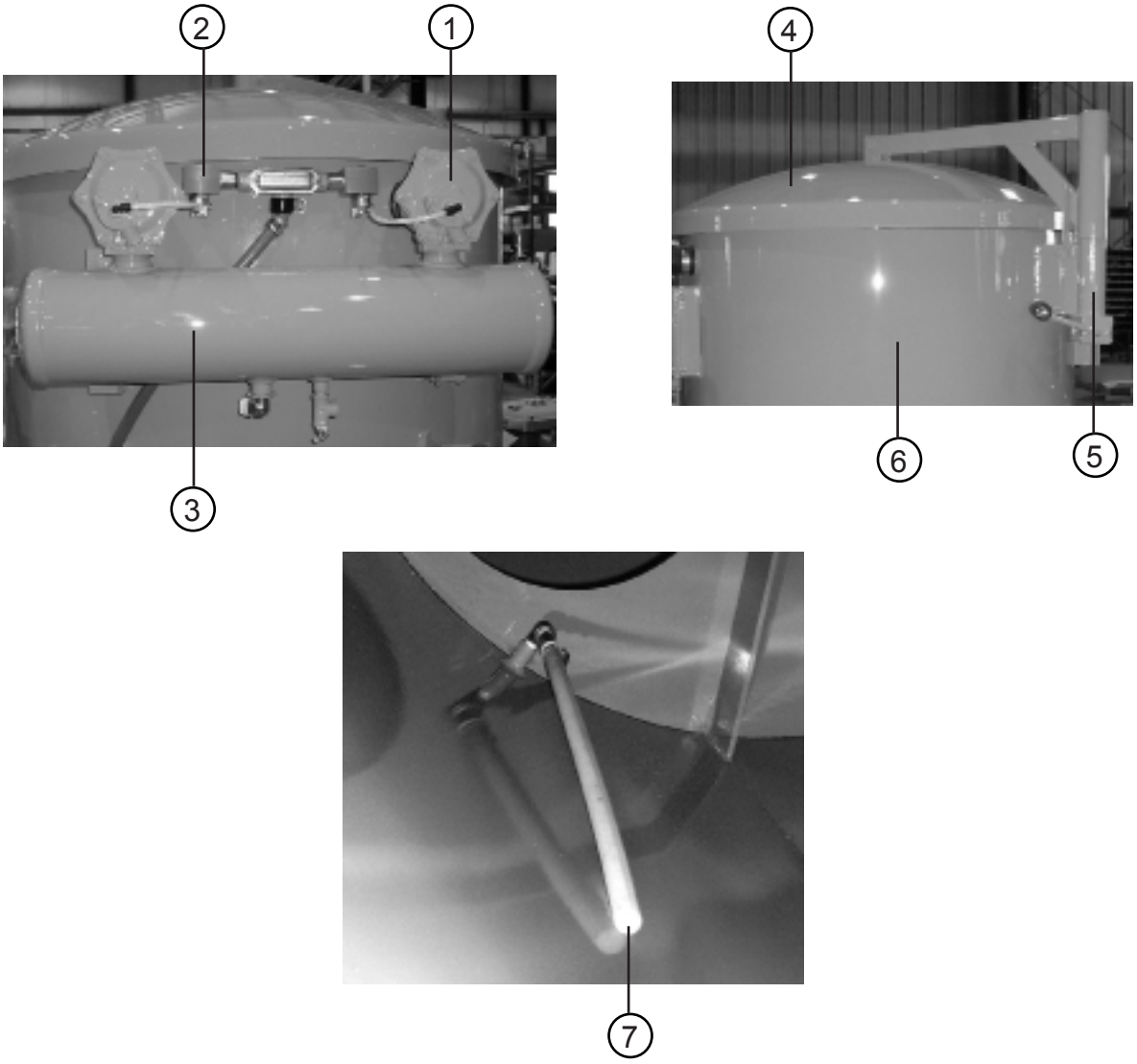
There are several different types of material bins, all of which will eventually fill with material. When this occurs, the unit will shut down and cannot be restarted until this condition is corrected. In some cases, as with end dump and rear dump hoppers, the Powerhead will be lifted off of the hopper with an airlift. The hopper will then be taken by a fork lift to a location to be emptied then replaced below the Powerhead. In this case the Powerhead must be restarted manually. In other cases, as with bottom dump hoppers, it may have a self dumping discharge gate. In this situation, the unit will shut down momentarily, discharge the material, the gate will close, and the unit will restart automatically (there is a switch in the panel to override this auto-restart). This self dumping gate may be replaced with any one of several optional discharges. Any thing from rotary feeders and pinch valves (for continuous discharge) to knife gates and fluid powered swing gates (for regulated and/or remote applications).





POWERHEAD

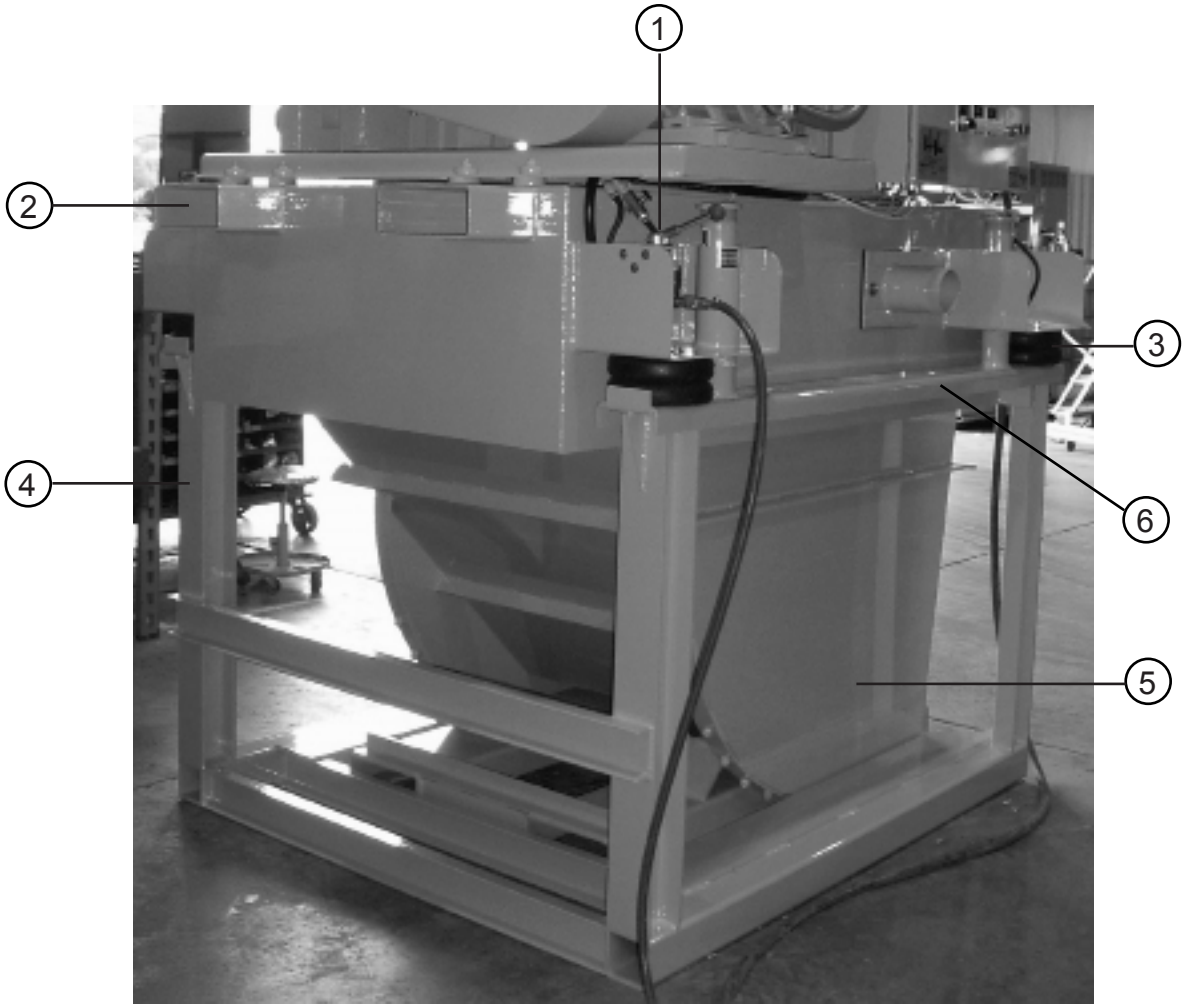
ITEM	PART #	DESCRIPTION	QTY
1	16-0189	VALVE,RELIEF,3",(16"HG)	1
2	03-0005	BLOWER,ROOTS,711 U-RAI,RH,BD,CW	1
3	04-0003	MOTOR,50HP,230/460/3/60,326T,TEFC	1
4	09-0015-MFD	SILENCER,6",STANDARD HI-VAC	1
5	06-0391	SURE-FLEX DRIVE COUPLING SIZE 10	1
6	12-0460	BROKEN BAG DET.W/INLET PIPE,850,R711URAI	1
7	20-0073	FILTER ELEMENT,FOR BROKEN BAG DETECTOR	3
8	27-0181	DREXELBROOK POINT-LINE LEVEL PROBE SYSTEM	1



FILTER / RECEIVER

* ITEM 6 LOCATED INSIDE FILTER/RECEIVER

ITEM	PART #	DESCRIPTION	QTY
1	16-0266	VALVE,DIAPHRAGM,1 1/2” NPT	4
2	U4003-0117	VALVE,SOL,RAIN PROOF,AIR BLAST,110V AC	4
3	01-4398	HEADER PIPE,PULSER,800 SERIES	2
4	01-4569	DOMED LID WELDMENT,800 SERIES,42”OD	1
5	01-4590	ARM,LIFTING,800 LID	1
6	20-0121	FILTER CARTRIDGE,GORTEX	4
7	20-0069	FILTER TUBE,PRESSURE DIFFERENTIAL	1



HOPPER / AIRLIFT

ITEM	PART #	DESCRIPTION	QTY
1	15-0001	VALVE,4-WAY,1/4NPT,MANUAL,AIR LIFT	1
2	N/A	POWERHEAD FORK TRUCK LIFTING AREA	N/A
3	15-0066	BAG,AIR LIFT,DOUBLE CONVOLUTE	4
4	31-2022-MFD	STAND,A/L,2CU.YD.,200/400/800 SERIES	1
5	30-1005-MFD	HOPPER,END,1.5YD	1
6	15-0496	AIRLIFT ASSY,800 SERIES,2 SHORT GUIDES	1

RECOMMENDED SPARE PARTS LIST FOR Hi-Vac® MODEL 850

ITEM	PART #	DESCRIPTION	QTY
1	20-0121	FILTER CARTRIDGE,GORTEX	4
2	18-0484	GASKET,SPOOL,SPONGE,3/8" X 15"OD X 12"ID	4
3	18-0501	WASHER,1/2"ID 1"OD,NEOPRENE BONDED GALV.	4
4	16-0266	VALVE,DIAPHRAGM,1 1/2" NPT	1
5	U4003-0117	VALVE,SOL,RAIN PROOF,AIR BLAST,110V AC	1
6	U4008-0004	GAUGE,AIR PRESSURE,0-200 PSI	1
7	U4109-0018-DI	TIMER BOARD,8 OUTPUT,DIGITAL	1
8	20-0069	FILTER TUBE,PRESSURE DIFFERENTIAL	1
9	U4008-0001	GAUGE,VACUUM,0-30"HG,PANEL MOUNT	1
10	U4008-0002	GAUGE,DIFFERENTIAL PRESSURE,0-50" WC	1
11	13-1235	SWITCH,DIFFERENTIAL PRESS.,5"-44"W.C	1
12	18-0354	GASKET,RUBBER WEATHER STRIPPING #1301	10.5 FT.
13	18-0356	PLUG,RUBBER,FOR RUB. SEAL #1456-0101-9	1
14	13-0979	SWITCH,LOW AIR PRESSURE, ELECTRIC	1
15	13-0001	SWITCH,PRESS. DIFF,SPDT,3-22"WC	1

Hi-Vac®

OPTIONS

OPTION 110
END DUMP RESTART

OPTION 130
BROKEN FILTER (BROKEN BAG DETECTOR)

Hi-Vac®

Hi-Vac®

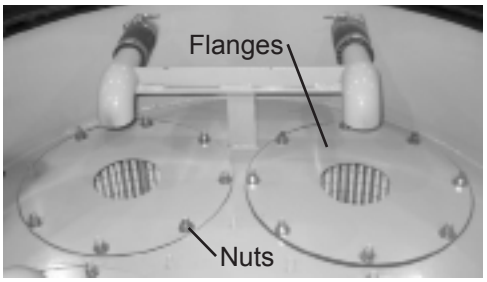
INSTALLATION

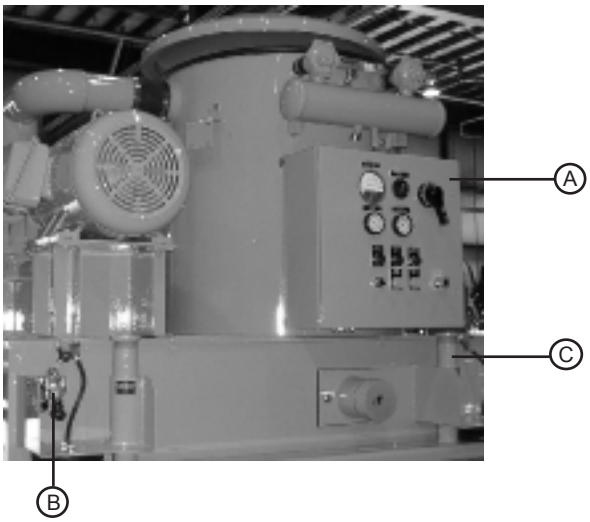
SET-UP PROCEDURES

After you have done all the inspection procedures as recommended in the beginning of this manual, you are now ready to install your **Hi-Vac®** unit. Please follow the procedures listed in this section. If you have any questions, please feel free to call **Hi-Vac®** at **1.800.752.2400** or in OHIO call **1.740.374.2306.**

Your **Hi-Vac®** unit is broken down into 4 sections. Hopper, Stand, Airlift, and Powerhead. Once together, you can move the unit throughout the plant. Be sure that the Airlift is bolted to the stand before operation begins.

1. Due to loosening during truck transport, retighten (20 ft. lbs.) the nuts (clean and dirty side) on flanges holding down each cartridge mounting spool.





2. Connect customer supplied power cord as shown in item **A**. This must be done by a certified electrician.

   Note: Refer to your electrical schematic for proper voltage specification.

   Note: Use National or Local electrical codes to install incoming power to your **Hi-Vac®** unit.

3. Connect air line to unit as shown in item **B**.

   Air Requirements are as follows:

   a) Airlift mechanism - **90 PSI** at **1 CFM**
   b) Filter Cleaning Regulator - **60 PSI** at **20 CFM** for **820**, **825**, and **830** series units
   c) Filter Cleaning Regulator - **60 PSI** at **40 CFM** for **840**, **850**, and **875** series units

   Note: The Filter Cleaning Regulator is set to **60 PSI** at the factory.

   Caution: Maximum air pressure should not exceed **120 PSI**.

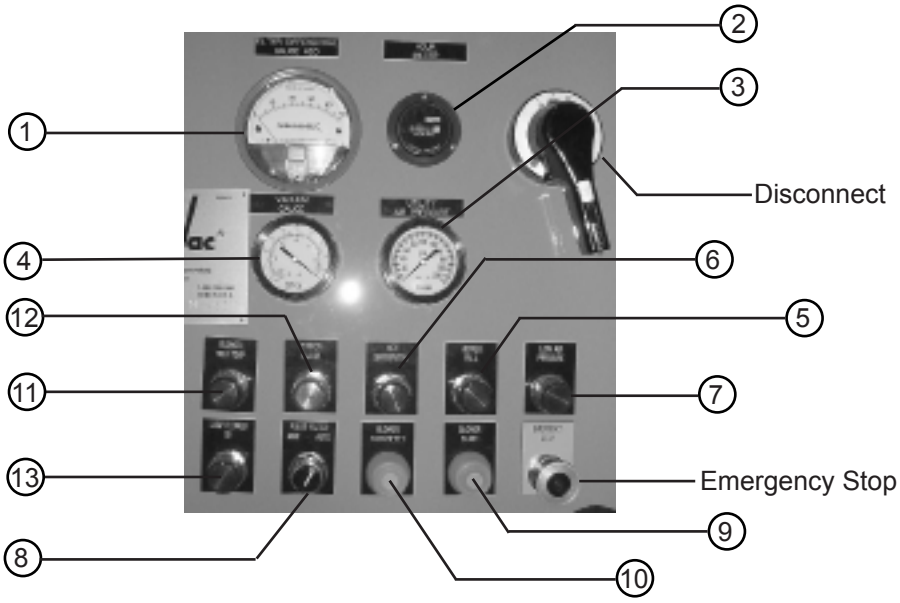
4. Remove the three (3) spacers on powerhead guides. Be sure to replace caps on guides and tighten down firmly. See item **C**.

5. You are now ready for the Pre-start procedures for your new **Hi-Vac®** unit.

Hi-Vac®

OPERATIONS

800 SERIES CONTROL PANEL (W/OPTIONS) BREAKDOWN



ITEM	DESCRIPTION	USED FOR
1	**Filter Differential Gauge**	Shows the operator the differential pressure between the clean and dirty side of the baghouse. This gauge, is essentially telling you how dirty the cartridges are and the filter cartridge should never go over 40” of water column.
2	**Hour Meter**	This displays the period of time that the unit has run.
3	**Utility Air Gauge**	A compressed air supply is required to clean the filter cartridges and raise the air lift. It should never go below 60PSI or the unit will shut down automatically. This gauge shows the air pressure in PSI.
4	**Vacuum Gauge**	Shows operator the level of vacuum that the system is performing at. Under normal operations this gauge will read 12” to 15” Hg. At this level, the relief valve will open. Maximum level is 16” Hg.
5	**“Hopper Full” Light**	Lights when hopper is full of material. This will go out when the hopper is emptied and the Blower “Stop/ Reset” button is pushed.
6	**“High Differential” Light**	Lights when the differential reading between the clean side and dirty side of the filters is above 40” of Water Column. Check the filters and replace if necessary. Offline cleaning, (without the vacuum pump on), can usually rejuvenate the cartridges.
7	**“Low Air Pressure” Light**	Lights when air pressure drops below 60 PSI and shuts down unit automatically. Check air pressure and press Blower “Stop/ Reset” button.
8	**Pulse Filter Selector Switch**	This allows the unit to pulse the filters only when the blower is running (AUTO), or to pulse the filters all the time (manual).
9	**“Blower Start” Pushbutton**	Turns blower on to start vacuum.
10	**“Blower Stop/Reset” Pushbutton**	Turns blower off and resets alarms.
11	**“Blower High Temp” Light**	Lights when the discharge air temperature of the vacuum pump reaches high set point.
12	**“ Broken Filter” Light**	Lights when the resistance to air flow is detected by a pressure differential switch at 20 inches of water pressure difference across the dust passage filters.
13	**“Low Blower Oil” Light**	Lights when oil level in the blower reaches a low setpoint.

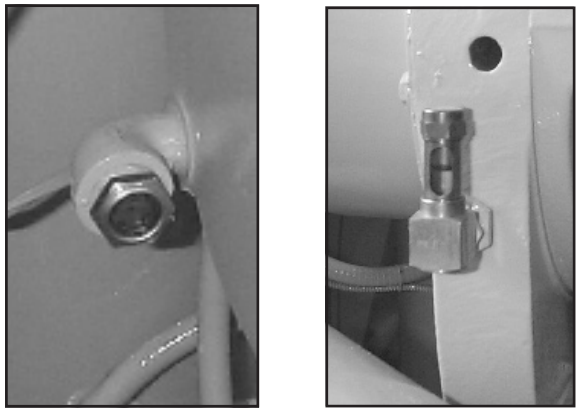
PRESTART PROCEDURES

NOTE: **As with any type of heavy duty equipment, caution must be exercised in its proper use. A thorough understanding of the use and functions of this equipment should be attained before an attempt is made to use it.**

1. Connect or disconnect vacuum conveying hoses and fittings to the machine inlet pipe or manifold system only when the powerhead is off.

NOTE: **FAILURE TO DO SO COULD RESULT IN INJURY TO OPERATING PERSONNEL.**

2. Before starting the machine, check all fluid levels. This includes the vacuum pump oil levels (Rear on all units and shaft end if so equipped). Level should be midway on site glass.



TYPES OF OIL SITE GLASSES

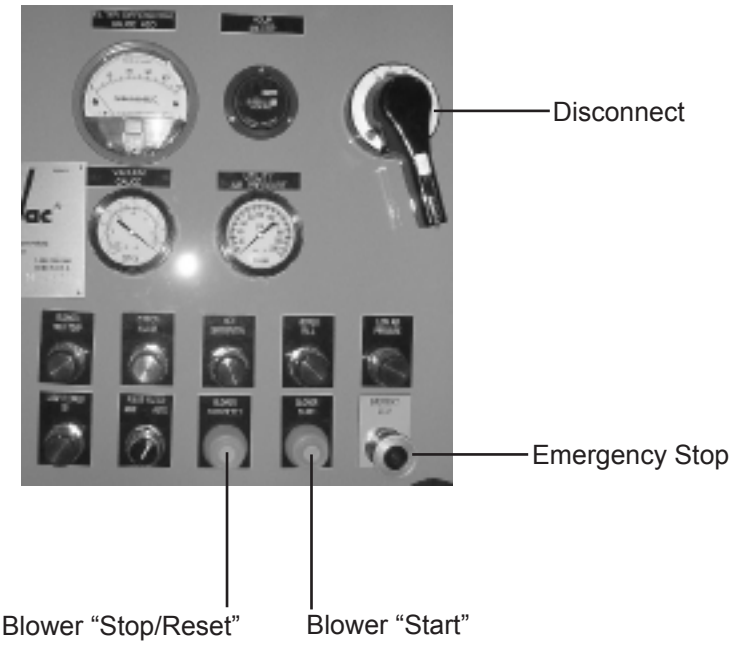
3. Before starting the machine, check all wiring for abrasions, cuts, cracks, etc. If any, repair or replace.

NOTE: **BE SURE TO DISCONNECT ALL POWER WHEN REPAIRING ELECTRICAL LINES. FAILURE TO DO SO COULD RESULT IN INJURY.**

4. Before starting the machine, check all conduit runs and fittings for defects.

PRESTART PROCEDURES

5. Check electric blower motor for proper rotation as follows:



A. While observing the silencer exhaust flap, “bump” electric motor by pushing the Blower “Start” button and immediately pushing the Blower “Stop/Reset” button.

I. If flap rises and air is exhausted from silencer, the rotation is correct.

II. If the silencer flap does not move, (air is being sucked in), the rotation is wrong.

a. Correct this by first insuring that incoming power is disconnected, then rewire incoming service wire at the top of the circuit breaker.

NOTE: This will correct both the blower motor as well as the optional air compressor if so equipped.

DO NOT REVERSE ANY WIRES BELOW THE MAIN CIRCUIT BREAKER.

START-UP PROCEDURES

A. Electric Motor Drive

1. Perform pre-start procedures

2. Confirm that vacuum conveying hoses and fittings are connected and pick up nozzle is out of material so that the vacuum pump may “breathe freely” during startup.

Note: Always connect or disconnect vacuum conveying hoses and nozzles to your **Hi-Vac®** inlet or manifold before turning on the powerhead. **FAILURE TO DO SO COULD RESULT IN INJURY TO OPERATING PERSONNEL.**

3. Control panel door must be closed and locked.

4. Circuit breaker turned on.

5. Push Blower “Stop/Reset” button.

6. Push Blower “Start” button.

Note: The blower is turning in the correct rotation if the silencer exhaust cover lifts open and air is discharging from the silencer.

Note: For units supplied with the new Drexelbrook “The Point Series” Level Probe: During initial start-up and after a loss of power, the operator must wait approx. 20 seconds to allow the probe to finish its calibration cycle. The blower will not start and the “Hopper Full” light will remain on until the cycle is complete and the blower “Stop

7. Your **Hi-Vac®** is now operating and ready to use. Check your gauges to make sure that the unit is running correctly.

8. Slowly introduce the pickup nozzle into the material to be conveyed.

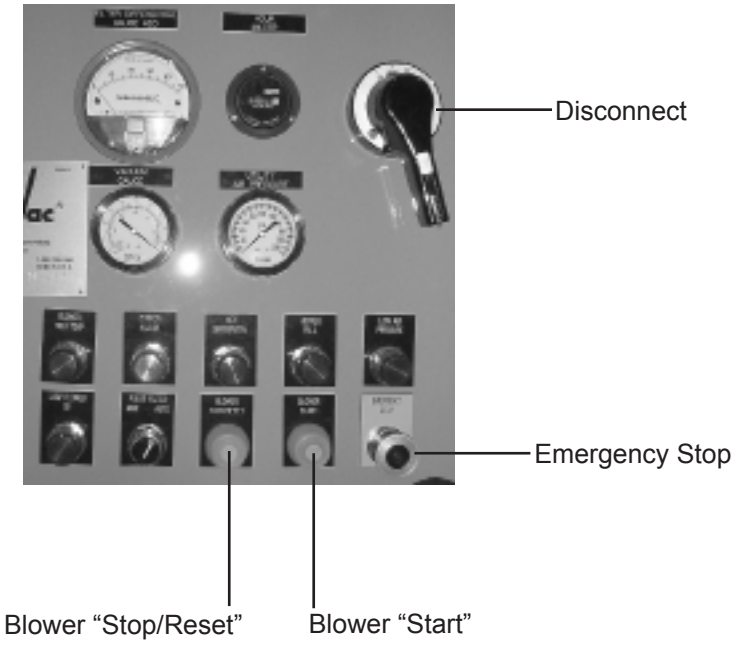
MANUAL SHUTDOWN PROCEDURES

A. Manual Stopping

1. Remove vacuum hose intake nozzle from material and allow sufficient time for vacuum hose to clear itself.

2. When time permits, allow vacuum pump to continue to run with no load “free breathing” a couple of minutes so that the vacuum has sufficient time to cool down.

3. Push Blower “Stop/Reset” button.



AUTOMATIC SHUTDOWNS (STANDARD)

The following conditions cause the **Hi-Vac®** Unit to shut down automatically.

1. HOPPER FULL

There is a level detector under the powerhead that extends into the hopper. When the hopper is full, the unit will shut down and the "**HOPPER FULL**" indicator will light on the control panel. This condition is to be reset after the problem is corrected by pressing the **BLOWER "STOP/RESET"** button on the control panel.

2. LOW UTILITY AIR PRESSURE

Compressed air is required to clean the filters. Without air, the filters would quickly become blinded. To ensure that air pressure is present or if the air pressure gets too low, the unit will shut down and the "**LOW AIR PRESSURE**" indicator will light on the control panel. This is a transient condition and the "**LOW AIR PRESSURE**" indicator will turn off on the control panel when proper air pressure is restored. Restart the unit by pressing the **BLOWER "START"** button on the control panel. The **BLOWER "STOP/RESET"** button can be pressed prior to the **BLOWER "START"** button; however, it is not a requirement.

3. HIGH DIFFERENTIAL

There is a pressure differential switch that will trip when the differential between the clean side and dirty side of the filter cartridges reaches 40" W.C. The unit will shut down and the "**HIGH DIFFERENTIAL**" indicator will light on the control panel. If this should occur, this means that the filters are not being cleaned sufficiently or need to be replaced. Check timer board, diaphragm valves and solenoids to make sure that the reverse pulse of air is taking place. The interval between pulses should be between 8 and 15 seconds (depending on the material being conveyed). Timer board is preset to 15 second time intervals at the factory. This condition is to be reset after the problem is corrected by pressing the **BLOWER "STOP/RESET"** button on the control panel.

Note: For additional details on this operation, refer to the "Cloth Dust Collector Protection" section located in the Automatic Protection Systems (Standard) within this manual.

AUTOMATIC SHUTDOWNS (OPTIONAL)

The following conditions cause the Hi-Vac® Unit to shut down automatically.

Note: Check the electrical schematic supplied with your unit to see if any of the following options apply.

1. HIGH BLOWER TEMPERATURE

There is a high temperature sensing thermal switch and gauge located on the side of the control panel. The thermal switch sensor is located in the discharge pipe of the vacuum pump. When the discharge air temperature reaches **350° F**, the unit will shut down and the "**BLOWER HIGH TEMP**" indicator will light on the control panel. This condition is to be reset after the problem is corrected by pressing the **BLOWER "STOP/RESET"** button on the control panel.

2. LOW OIL LEVEL IN THE GEAR CASE(S) OF THE VACUUM PUMP

There is a low oil level float switch(s), installed near the vacuum pump. Daily checks of the oil level, by visually inspecting the oil level sight glass(s) on the vacuum pump, will prevent a low oil condition. Do not use level switches to check oil level. In the event a loss of oil occurs during operation, the unit will shut down and the "**BLOWER LOW OIL**" indicator will light on the control panel. This condition is to be reset after the problem is corrected by pressing the **BLOWER "STOP/RESET"** button on the control panel.

3. HIGH TEMPERATURE VACUUM BREAKER

There is a high temperature sensing thermal switch and gauge located on the side of the control panel. The thermal switch sensor is located in the discharge pipe of the vacuum pump. When the discharge air temperature reaches **340° F**, a compressed air operated butterfly valve located on the Filter/Receiver opens allowing the air temperature to return to the low setpoint of **240° F**. If the discharge air temperature reaches **350° F**, a second temperature switch located inside the control panel will shut down the unit and the "**BLOWER HIGH TEMP**" indicator will light on the control panel. This condition is to be reset after the problem is corrected by pressing the **BLOWER "STOP/RESET"** button on the control panel.

Note: For details on the operation of the High Vacuum part of this option, refer to the "High Vacuum, Vacuum Breaker" section located in the Automatic Protection Systems (Optional) within this manual.

4. BROKEN FILTER

This unit is equipped with a Broken Bag Detector which contains a set of dust passage filters. These filters are installed between the clean side of the filters and the vacuum pump inlet to collect the dust passing through the leaking filters. When a sufficient amount of dust is collected on the dust passage filters, it will cause an increased resistance to air flow. This resistance to air flow is detected by a pressure differential switch and at 20 inches of water pressure difference across the dust passage filters, the unit will shut down and the "**BROKEN FILTER**" indicator will light on the control panel. This condition can only be reset by removing power from the system.

AUTOMATIC PROTECTION SYSTEMS (STANDARD)

The following conditions can cause serious damage to the **Hi-Vac®** unit. **T**he Hi-Vac® unit is designed with built-in protection from each of the following listed potential hazards by the following means:

A. EXCESSIVELY HIGH VACUUM

The Hi-Vac® unit is equipped with a spring loaded mechanical vacuum relief valve which is set at a maximum allowable vacuum of 16 inches of mercury (hg) at sea level. When the vacuum reaches this level, the spring loaded mechanical vacuum relief valve (located on the inlet pipe of the vacuum pump) opens and allows air to enter the vacuum pump directly, thus relieving the high vacuum condition. When the vacuum has gone down sufficiently, the valve automatically closes.

B. CLOTH DUST COLLECTOR PROTECTION

The Hi-Vac® unit is equipped with a differential pressure switch and gauge to measure and limit the pressure drop across the filters and to prevent an overloading of the filters with dust. As the dust buildup increases on the dirty air side of the filters, so does the resistance to air flow through the filters. This resistance will cause a higher static vacuum on the clean side (the inner side) and a lower static vacuum on the dirty side of the filters. This difference is the “differential pressure”. Any dust buildup on the filters which causes 40 inches of water differential pressure is excessive. The pressure differential switch is set so that at 40 inches of water, the Hi-Vac® will shut itself off.

Note: For additional details on this operation, refer to the “High Differential” section located in the Automatic Shutdowns (Standard) within this manual.

AUTOMATIC PROTECTION SYSTEMS (OPTIONAL)

A. HIGH VACUUM VACUUM BREAKER

A compressed air operated butterfly valve located on the Filter/receiver opens when the operating vacuum reaches the high set point and closes when the operating vacuum is relieved to the low setpoint.

Note: For details on the operation of the HighTemperature part of this option, refer to the “High Temperature Vacuum Breaker” section located in the Automatic Shutdowns (Optional) within this manual.

MATERIAL CONVEYING TIPS

1. The **Hi-Vac®** should always be operated with one of the nozzles furnished. For heavy bulk material pick up, air must always be bled in with material for conveying through hose. Hose “dead head”, pick up of material piles without our nozzle, should be avoided because hose overloading will occur causing the conveying hose and/or pipe to become plugged.

2. For maximum bulk pick up rate bury the end of the bulk nozzle into the material pile. Material an conveying air will automatically be drawn into the nozzle. For peak capacity the **Hi-Vac®** vacuum pump should operate between 13" Hg. and 15" Hg. as shown on the vacuum gauge located on the control panel. Any extra vacuum capability should be reserved to take care of sudden material surges into the nozzle. The vacuum is adjustable by means of the air bleed-in sleeve on the nozzle. Keep in mind the following:

   A. Lots of air + little material = low vacuum

   B. Little air + lots of material = high vacuum

   C. No air + no material conveyed = plugged conveying line

3. Additional nozzle movement in material will be necessary for maximum capacity on materials that are not free-flowing.

4. Eliminate as many air leaks as possible in conveying hoses. For instance, replace hoses that are worn through, tighten compression type hose couplings for minimum air leakage.

5. Keep conveying hoses as straight as possible. Eliminate sudden kinks or sharp bends whenever possible. The best way to avoid unnecessary bends in the hose is to carry the nozzle end past the work area until the hose is straight, then go back to work area.

6. Do not convey hot and moist material. Steaming may cause moisture to condense on the filter cartridges causing a non-releasing “cake” on the filter cartridges. This cake must then be manually removed from the filter cartridges.

7. Use the correct nozzle for the work

   A. Bulk nozzle: To be used when vacuuming measurable depths of liquids and large piles of material.

   B. Round lance nozzle: For general clean-up and reaching in corners.

   C. Flat lance nozzle: For vacuuming between and under equipment and into tight places.

   D. Flared nozzle: For cleaning large areas where materials do not exceed 6" depth. Serrated edge for caked materials.

   E. Hand brushes: For removal of accumulated dust on flat and/or irregular surfaces.

MAINTENANCE

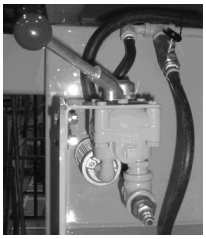
FILTER CARTRIDGE CHANGING PROCEDURES

1. Disconnect power to main breaker at control panel.

DISCONNECT

2. Disconnect air supply to **Hi-Vac®** unit located beside the airlift control valve and bleed off any air pressure that remains in the system. Header tanks have air in them because of check valve. Drain via petcock.

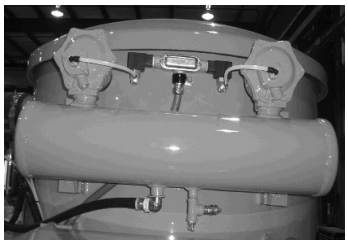
3. Using hand crank at rear of filter housing, raise domed lid high enough to clear top of housing. Be sure it is high enough to clear the guide so damage does not occur to the support.



AIRLIFT CONTROL

4. Swing domed lid to the side where it will not interfere with any obstacles.

5. Loosen clamps at purge tube housing connections located inside clean air side of filter housing.



HEADER PIPE PETCOCK

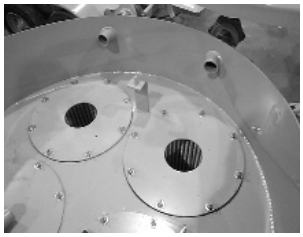
6. Loosen nuts securing purge pipes at other end.

7. Remove purge pipe assembly, saving all hardware for later use.

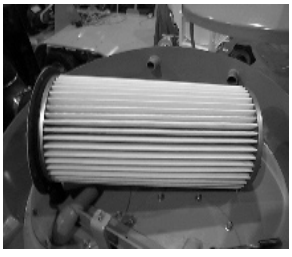
FILTER HOUSING

8. Remove hardware from flanges holding down each cartridge mounting spool.

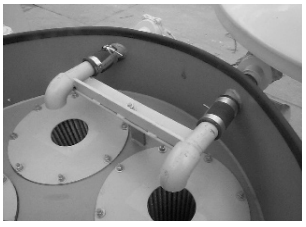
9. Lift this assembly straight up and out of tube sheet.



SPOOL FLANGES



FILTER ASSEMBLY



PURGE PIPES

FILTER CARTRIDGE CHANGING PROCEDURES

FILTER ASSEMBLY

10. Turn filter assembly over and remove hardware securing filter to spool.

11. Remove filter, spool gasket, neoprene washer, and discard in responsible way.

12. Repeat this with all other cartridges.

13. Clean all surfaces of tube sheet and cartridge mounting spools.

SPOOL GASKET

14. Install new spool gasket.

15. Slip new filter cartridge onto spool and ensure that gasket is in proper contact with spool.

15. Install new neoprene washer and attach filter to spool using same hardware. Inspect cartridge gasket as you tighten to ensure gasket is properly seated.

16. Carefully insert each assembly into tube sheet lining up holes on top of spool with studs on tubesheet. Be careful not to damage filter doing this.

17. Reattach all hardware to secure these assemblies into place.

NEOPRENE WASHER

WARNING: CARTRIDGE FILTERS MUST BE TIGHTLY SECURED IN PLACE OR DUST PASSAGE WILL OCCUR CAUSING SEVERE DAMAGE TO BLOWER.

18. Swing domed lid over filter housing and lower back down into position. The lid does not need to be tightened down as long as it is resting on the gasket.

ADJUSTING THE SENSITIVITY OF THE LEVEL PROBE

Every standard **Hi-Vac®** comes with a Drexelbrook Level Probe. This probe is used for wet or dry applications. The sensitivity of the probe may need to be adjusted according to the material that is filling the hopper or if the probe is replaced.

The Drexelbrook Level Probe used on the **Hi-Vac®** units has a level detection range from approximately 6 inches from the probe tip to a level that applies pressure on the probe tip.

The level probe sensitivity may need to be adjusted to get the desired level of your particular material in the hopper .

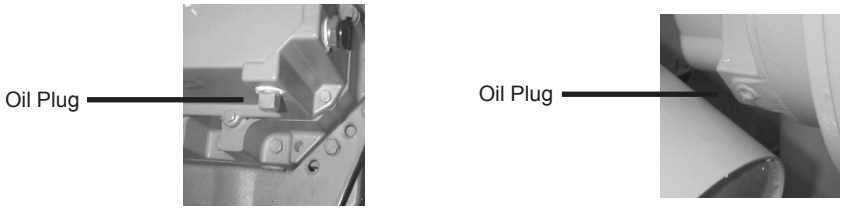
To adjust the sensitivity, refer to the manufacturer's manual.

MAINTENANCE INSTRUCTIONS

1. LUBRICATION INTERVALS

A. Positive Displacement Vacuum Pumps (Blowers)

1. Drain oil reservoir and replace with new oil every 500 hours of operation. **Depending on the model of blower, Oil plug may vary in location. Check your blower manual for exact location.**



2. Grease lubricated bearing should have the grease replenished every 500 hours of operation, but it should be noted that excessive grease will cause overheating. The escape vent must not be allowed to become blocked by solidified grease. **Depending on the model of blower, Grease fittings my vary in location. Check blower manual for exact location.**

B. Electric Motor

1. Follow the recommendations of the motor manufacturer's manual located in the component manual section.

NOTE: Record the performed maintenance on "Lubrication Maintenance Record Form".

C. Filter Regulator Lubricator (If applicable)

1. Check oil level in Lubricator and fill when needed.

RECOMMENDED LUBRICANTS

1. Positive Displacement Vacuum Pump (Blowers)

Follow the recommendations of the blower manufacturers manual located in the “Manufacturers Manuals” section.

2. Electric Motor

Follow the recommendations of the motor manufacturers manual located in the “Manufacturers Manuals” section.

3. Lubricator (if applicable)

ISO VG32 or equivalent.

LUBRICATION MAINTENANCE RECORD

OWNER_____

PLANT LOCATION_____ **BUILDING**_____

Hi-Vac® SERIAL # HV- _____ **MODEL** _____

MAINTENANCE PERFORMED BY_____ **DATE:**_____

RECORD Hi-Vac® HOUR METER _____ **HOURS**

LUBRICATION PERFORMED	OIL DRAINED & CHANGED	OIL ADDED	GREASED
VACUUM PUMP			
FILTER REGULATOR LUBRICATOR			N/A
ELECTRIC MOTOR	N/A	N/A	

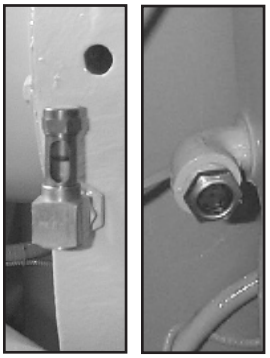
Hi-Vac®

PREVENTIVE MAINTENANCE

DAILY CHECKS

Perform the daily maintenance checks listed below and record on Record Form 1.

NOTE: It is suggested the Hi-Vac unit be started once per every (7) days to prevent rust build-up on the vacuum pump lobes and housing.



Oil Site Plugs

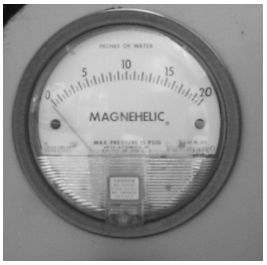
A. Vacuum Pump Oil Level (with machine NOT running):

1. Checking the vacuum pump oil level is critical and should be done frequently. Some vacuum pumps have oil level sight gauges, and others have oil level plugs. Refer to the vacuum pump's maintenance manual located in the manufacturer's bulletins section, to determine proper oil level requirements. If oil is needed, see "Recommended Lubricants" in the "Maintenance" section.

NOTE: Powerhead must be on level surface to get an accurate oil level reading.

B. Filter Pressure Differential (with machine running)

With the inlet to your machine open, record the reading on the pressure differential gauge in inches H_2O (water).



Differential Gauge

C. No Load Vacuum (with machine running)

With the inlet completely open, check vacuum gauge reading. This "no load" reading is an important indicator of the condition of the powerhead. The "no load" vacuum should be between 1 to 4 inches of mercury (Hg). Record vacuum reading in (Hg).

1. If "no load" vacuum reading is zero (0),
   a. Inspect vacuum gauge plumbing for hose rupture, loose fittings, or plugged lines.
   b. Check that the powerhead is properly seated on the hopper and that there are no leaks.
2. If "no load" vacuum reading is higher,
   a. Check for obstruction in the machine inlet.
   b. Check differential gauge. Reading should be between 1" and 7" of water (H_2O)
      1. If higher than 10 inches of water, a visual inspection should be made or excessive buildup of material on the filter cartridges.

Vacuum Gauge

DAILY CHECKS

Perform the daily maintenance checks listed below and record on Record Form 1.

D. Dust Discharge (with machine running)

Inspect the silencer for visible dust in the air stream.

NOTE: Shut the unit off immediately if dust is present. Any dust discharge should be corrected immediately to protect the vacuum pump.

1. Check filter cartridges for rupture or leaks by raising the lid and looking for any signs of dust on top of the filter cartridges or under the inside of the domed lid.

SILENCER

E. Mechanical Vacuum Relief Valve (with machine running)

Check vacuum relief valve for proper operation. With the machine running in a "no load" condition, slowly block off power head inlet until 15" of mercury (at sea level) is indicated on the vacuum gauge. Relief valve should remain closed. Continue to block off powerhead inlet while watching vacuum gauge. Relief valve should open at 16" of mercury (at sea level) +/- 1/2 inch. Record where valve opens in inches of Hg.

NOTE: Do not check relief valve with hand! You will hear the in rush of air when the valve opens.

NOTE: Under no circumstances should the powerhead be used with a valve that opens higher then 16" of mercury.

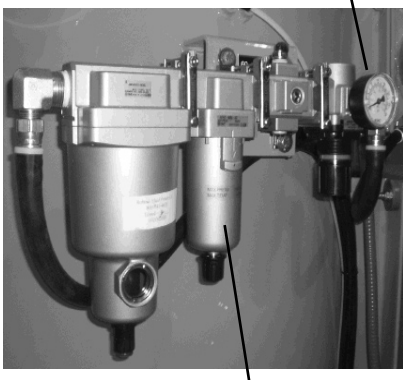
RELIEF VALVE

F. Compressed Air Pressure Switch (with machine running)

With the machine compressed air system fully charged, Close off supply of compressed air. Slowly bleed-off compressed air until "Low Air Pressure" light comes on and record the reading on the gauge mounted on the compressed air regulator. This reading should be approximately 60 PSI.

G. Compressed Air Regulator Filter Bowl (with machine running)

Inspect regulator filter bowl sight glass and empty if partially full. Refer to regulator instructions located in the "Manufacturer's Bulletins" section of this manual.



WEEKLY CHECKS

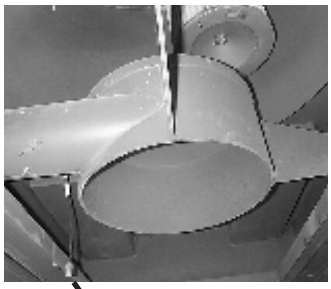
Perform the weekly maintenance checks listed below and record on Record Form 2.

A. Electric Cable

Visually inspect all electrical conduit, cables, and connections for signs of abrasions or breaks.

B. Level Probe

Check level probe for operation by touching the probe. Control panel must be on with the blower OFF. The "Hopper Full" light will turn "on" on the control panel.



C. Vacuum Leaks

Inspect all openings for possible damage to gaskets. With machine running, listen for audible leaks around doors, hose connections, flanges, etc., and repair as required.

D. Compressed Air Line Leaks

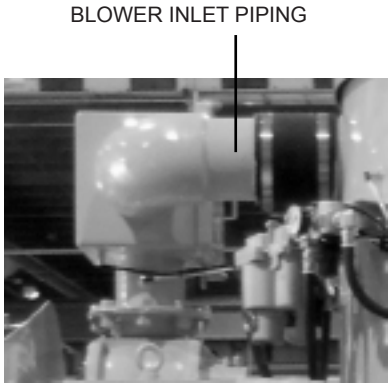
Check for audible leaks in the compressed air lines. Re-tighten fittings or repair as required.

MONTHLY CHECKS

Perform the monthly maintenance checks listed below and record on Record Form 3.

A. Vacuum Pump Lobe Wear

Remove the vacuum pump inlet pipe and inspect blower lobes for wear.



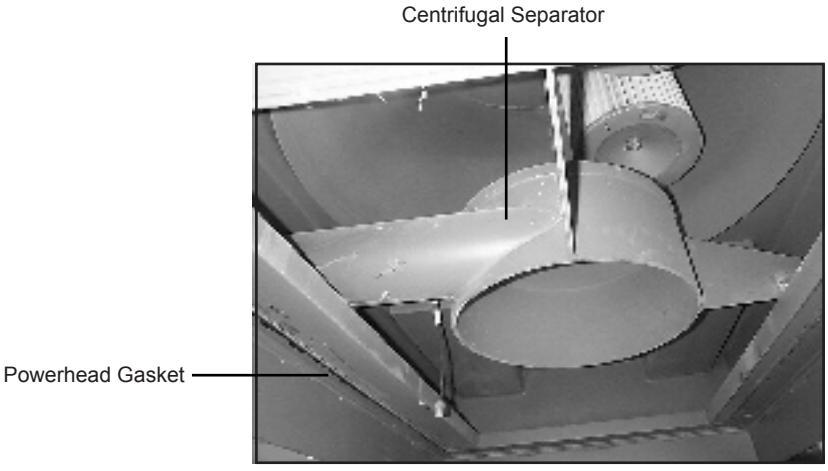
NOTE: During monthly check for wear of vacuum pump lobes it recommended that “Liquid Wrench Lubricating & Penetrating Oil” (a Radiator Specialty Company product) or equal, be used to lubricate the vacuum pump lobes and the inside of the vacuum pump housing.

B. Centrifugal Separator

Remove end dump hopper or remove side access door (fixed hopper) and inspect centrifugal separator ring on bottom of your **Hi-Vac®** powerhead for signs of wear. Replace Before it is worn through.

C. Powerhead Gasket

Remove end dump hopper or remove hopper side access door (fixed hopper) Inspect gasket at bottom of your **Hi-Vac®** powerhead for positive seal against the hopper and for possible wear.



LUBRICATION / MAINTENANCE RECORD

RECORD FORM 1
DAILY

OWNER _____

PLANT LOCATION _____ **BUILDING** _____

Hi-Vac® SERIAL # HV- _____ **MODEL** _____

MAINTENANCE PERFORMED BY _____ **DATE:** _____

RECORD HiVAC HOUR METER _____ **HOURS**

CHECKS PERFORMED	NEEDS NO MAINTENANCE	MAINTENANCE NEEDED	MAINTENANCE PERFORMED
(A) VACUUM PUMP OIL			
(B) PRESSURE DIFFERENTIAL OF FILTER BAGS "H2O"			
(C) NO LOAD VACUUM "Hg"			
(D) DUST DISCHARGE			
(E) MECHANICAL VACUUM RELIEF VALVE(S) AT "Hg"			
(F) COMPRESSED AIR PRESSURE SWITCH			
(G) COMPRESSED AIR REGULATOR BOWL CLEAN			

LUBRICATION / MAINTENANCE RECORD

RECORD FORM 2
WEEKLY

OWNER_____

PLANT LOCATION_____ **BUILDING**_____

Hi-Vac® SERIAL # HV-_____ **MODEL**_____

MAINTENANCE PERFORMED BY_____ **DATE:**_____

RECORD Hi-Vac® HOUR METER_____ **HOURS**

CHECKS PERFORMED	NEEDS NO MAINTENANCE	MAINTENANCE NEEDED	MAINTENANCE PERFORMED
(A) ELECTRIC CABLE			
(B) LEVEL PROBE			
(C) VACUUM LEAKS			
(D) COMPRESSED AIR LINE LEAKS			

LUBRICATION / MAINTENANCE RECORD

RECORD FORM 3
MONTHLY

OWNER _____

PLANT LOCATION _____ **BUILDING** _____

Hi-Vac® SERIAL # HV- _____ **MODEL** _____

MAINTENANCE PERFORMED BY _____ **DATE:** _____

RECORD Hi-Vac® HOUR METER _____ **HOURS**

CHECKS PERFORMED	NEEDS NO MAINTENANCE	MAINTENANCE NEEDED	MAINTENANCE PERFORMED
(A) VACUUM PUMP LOBE WEAR			
(B) CENTRIFUGAL SEPARATOR			
(C) POWERHEAD GASKET			

The following are some problems which may arise and ways to correct them.

6	=	BLOWER, Drive motor overloads tripped
7	=	BLOWER, Not starting
9	=	FILTER CARTRIDGE, Dirty
11	=	FILTER CARTRIDGE, Holes in
13	=	HOPPER, “Bottom Dump” LED is lit
15	=	ROTARY AIRLOCK, Drive motor overloads tripped
16	=	SCREW CONVEYOR, Drive motor overloads tripped
17	=	VACUUM, Continuous high
18	=	VACUUM, Sudden loss of
19	=	Hi-Vac® Unit will not shut down when hopper is full
20	=	Control panel circuit breaker blows immediately when Blower “Start” button is pressed.

Note: Some problems listed above may not apply to your equipment.

PROBLEMS	POSSIBLE CAUSES	CHECK FOR	
1,4,7	Bag Shaker Motor Overloads tripped Excessive current draw in shaker motors due to malfunction in system	A. B. C.	Drive Mechanism - binding or misalignment. Gearbox lubrication Rod end bearing lubrication
NOTE: If tripped, they must be reset inside the control panel. Remember, the bags should shake each time the HiVAC is shut down, either manually or automatically.			
2,3,4	Broken Differential Pressure Line (the black plastic tubing) If the black plastic tubing is damaged in any way, i.e. cracked, crimped, melted and colapsed or torn out of a connector, false readings generally are as follows:	A. B.	If the high pressure (dirty side of the filter bags) is broken, you will have excessive shutdown bag shake cycles. If these lines are crimped (no air passage), you may never shut down on dirty bags. If the low pressure (clean side of the filter bags) is broken, the pressure differential gauge will read "0" and a bag shaking cycle will not be initiated when the pressure difference across the bags reaches 20" H_2O
5,7	Blower Oil Level Low If the oil level in the blower drops to a critical level.....	A. B. C. D.	Oil level is at proper level in sight glass of blower Oil level switch is at porper adjustment (the oil level in the switch should be approximately 1/4" below the top inside of the switch itself and even with the sight glasses of the blower if filled to proper level Pool of oil below blower indicates external leakage. Repair as required. No sign of external leak. A certain amount of oil will be lost naturally and if left unattended will eventually cause the switch to trip. If the unit shuts down frequently because of this, it is possible that there is an internal leak in the blower. Refer to the blower manual for proper correctiive action.
7		A.	Check for "Blower Oil Level" indication.
7		A.	Check for "Blower Temperature high" indication.
7		A.	Check for one of the high material level indicators.
7		A.	Chck for "Dust Passage" indication.
7,8,10,17,18	Dirty Filter Bags During operation, whenever pressure differential across bags reaches 20" water column, the HiVAC will shut down and shake bags, then restart. This is a normal operation. If this occurs too frequently.....	A. B. C.	"Cake" on filter bags (caused by conveying hot moist material). Do not convey Hot, Moist material. Replacement of bags is necessary. (see bag change procedures.) Impregnation of material is common after prolonged use of the HiVAC. This is material absorbed into the fabric which will not shake out. Replacement of bags is necessary. (see bag change procedures.) Hole or broken line in the differential tubing on the dirty side.

Note: Some problems listed above may not apply to your equipment.

PROBLEMS	POSSIBLE CAUSES	CHECK FOR
7,12	Broken bag Detector (dust passage) Indicating filter bag starting to leak	A. Small amount of leakage. May be stopped by retightening the hold down retainers on top of bags. Broken bag detector filter must be serviced. See "servicing instructions" for broken bag detector filters. B. No amount of leakage observed There will always be a certain amount of leakage regardless of bag condition. After a time, this will collect on broken bag detector filters requiring them be servieced. See "servicing instructions" for broken bag detector filters. C. Large amounts. Usually indicate worn or torn filter bags. It is recommended, at this time, to replace all filter bags reducing bag maintenance time.
8,17,18	Vacuum Relief Valve Jammed In Closed Position	Inspect and correct malfunction. Possibly there is something lodged in the valve.
8,17,18	Obstruction in the conveying hose	Inspect hose and free obstruction from hose by raising and impacting heavy part of hose (where plugging is probably located) on floor while unit is running. On more severe cases, turn plugged hose section end for end for a reverse air purge through hose. Material with clay or other bonding material which has consistancy of mud may build up inside the conveying hose adding more moisture for slurry handling. Impact hose on floor as above.
8,17,18	Obstruction in linear separator	With HiVAC turned off, remove the linear separator door located on top of the powerhead. Inspect for and remove any obstruction.
8,18	Blower Temperature High The air discharged by the blower gets above 350 degrees F.	A. Low blower speed which reduces the amount of cooling air through blower. Usually caused by loose belts. (Refer to "tensioning V-belts" section in this manual. B. High vacuum caused by operating for long periods of time at vacuums in excess of 16" Hg.
8,18	Slipping of V-belts.	Check the belt tension and tighten if necessary. Should the belt be worn, replace all belts with a matched set. (Refer to "tensioning V-belts" section in this manual.
8,18	Worn Vacuum Pump Lobes or Housing	The greater the wear, the less vacuum achieved and the hotter a vacuum pump will run.
NOTE: IMPORTANT!!!! Vacuum Pump Wear. Continual visible dust passage through vacuum pump due to a filter bag rupture or leak will cause premature vacuum pump failure. At the first sign of dust being discharged from the HiVAC, prompt elimination of the dust passage is necessary. EXAMPLE: If the HiVAC has been used extensively and a bag rupture is found, we recommend changing all filter bags to reduce bag maintenance time.		
9,11	Leakage past flap seal	At the bottom of the bag house compartment is a rubber flap seal. Visually inspect the rubber flap seal for signs of air leakage, wear, tears, or if it has been pulled in.
13,14	Material collecting hopper is full	Empty hopper and reset controls by pressing "Stop/Reset" push button.

Note: Some problems listed above may not apply to your equipment.

PROBLEMS	POSSIBLE CAUSES	CHECK FOR	
13,14	Instrument indicates alarm at all times	A.	Coating build-up on sensing element (HLFS) - needs longer coat shield. Consult factory.
		B.	Sensing element not ""seeing"" material (LLFS)
		C.	Short in coax cable (HLFS). See section 10-DP.2.5
		D.	Open in the coax cable (LLFS). See section 10-DP.2.5
		E.	Defect in sensing element - See section 10-DP.2.5
		F.	Loss of power (HLFS) See electrical schematic.
		G.	Improper wiring - See electrical schematic.
		H.	Improper Calibration - See section 10-DP.1.3
		I.	Electronic Malfunction - See section 10-DP.2.2
		J.	Moisture in Condulet - See section 10-DP.2.1
		K.	Moisture in Cable Conduit - section 10-DP.2.4
13,14,15	Instrument In Calibration Is Not Stable	A.	Open in Coax Cable - See section 10-DP.2.5
		B.	Improper Wiring - See Electrical Schematic
		C.	Insufficient signal from sensing element - need longer insertion.
		D.	Set-point is beyond the tuning - Consult factory
		E.	Electronic Malfunction - See section 10-DP.2.2
		F.	Moisture in Condulet - See section 10-DP.2.4
		G.	Moisture in Conduit Cable - section 10-DP.2.5
13,14,19	Instrument Gives False Alarm	A.	Improper Calibration - See section 10-DP.1.3
		B.	Loose wiring - See elecrical schematic
		C.	Electronic Malfunction - See section 10-DP.2.2
		D.	Static sparks causing electronic damage - Need spark protection circuit - consult factory.
13,14,19	Instrument Operates Intermittently	A.	Improper Calibration - See section 10-DP.1.3
		B.	Loose wiring - See elecrical schematic
		C.	Electronic Malfunction - See section 10-DP.2.2
		D.	Static sparks causing electronic damage - Need spark protection circuit - consult factory.
18	Conveying Hose Worn Through	Bleeding in excessive amounts of air somewhere between pickup nozzle and vacuum pump.	
18	Poor Sealing	Between powerhead, hopper, and doors due to improper seating on damaged gasket.	

Note: Some problems listed above may not apply to your equipment.

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